ENTOMOLOGY FOR BEGINNERS.

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CLYTUS.

Among the Coleopterous hosts there is a family called Long-horns, or Capricorns, in vulgar parlance ; or Cerambycidæ, when we are talking learnedly. They derive these names from the fact that they possess very long antennæ (sometimes longer than their bodies), which are generally re-curved like the horns of a wild goat (the Latin *Caper*). They form a very large family ; already 4,000 of them are known and recognized by the scientific world. They comprise some of the largest, most showy, as well as most destructive, of the Beetles ; one of African origin—*Prionus Hayesii* by name—is five inches long and one broad, with antennæ of seven inches and legs of four. The Long-horns are world-wide, and their abundance is in proportion to the richness of vegetation of different countries, so that South America, India, Ceylon and the Moluccas contain a great number of the most beautiful and the largest Capricorns.

They have earned the name of Borers because they are, in fact, "animated gimlets," and spend their lives while in the larval state in perforating and feeding upon trees ; some live and carry on their operations in the trunks, others in the branches ; some devour the wood, others the pith ; some are found only in shrubs, some in the stems of herbaceous plants, others confine their attentions to the roots. Some are to be found only on one species of plants, others have a wider range. Some bore straight holes, others branch off at divers angles, others make tracks as various as those of an engraver, while some are regular screws. The Germans, lovers of music, as they are, call these beetles "Fiddlers," because they give forth, especially when annoyed or taken in the hand, a squeaking or rasping noise produced by rubbing the joints of the thorax and abdomen together. Some of the family are not only musical-boxes, but scent-bottles as well, and emit a fragrant odor not unlike that of otto of roses.

The members of this family, as a rule, are very handsome, and readily attract notice by their elegant forms and resplendent attire, that is, when of full age ; when young—in the creeping age—they are ugly in the extreme. Harris tells us that the various members of the family resemble

each other in the following respects : The antennæ are long and tapering. The body is oblong, approaching to a cylindrical form, a little flattened above, and tapering somewhat behind. The head is short and armed with powerful jaws. The thorax is either square, barrel-shaped, or narrowed before, and is not so wide behind as the wing-covers. The legs are long ; the thighs thickened in the middle ; the feet four-jointed, not formed for rapid motion, but for standing securely, being broad and cushioned beneath, with the third joint deeply notched. Most of these beetles remain upon the trees and shrubs during the day time, but fly abroad at night. Some of them, however, fly by day, and may be found on flowers, feeding on the pollen and blossoms.

Fig. 21.

The pride of our Canadian forests, the Maple tree, suffers much from the attacks of *Clytus speciosus* (fig. 21), the largest of our native members of the family. This beautiful beetle is easily recognized ; it is about an inch in length, and the third of one in breadth. The head is yellow, with antennæ and eyes of reddish black. In shape the body is somewhat cylindrical, a little flattened above and tapering behind. The thorax is black with two yellow transverse spots on each side. The wing covers for more than half their length are black, for the rest they are yellow ; they are gaily ornamented with bands and spots arranged as follows : A yellow spot on each shoulder, a broad yellow curved band or arch, of which the yellow scutel forms the keystone, on the base of the wing covers ; behind this a zig-zag yellow band forming the letter W ; across the middle another yellow band arching backwards, and on the yellow tip a curved band and a spot of a black color ; the legs are yellow.

The under side of the abdomen is reddish yellow, variegated with brown The female has the advantage of her mate in size, but her antennæ are somewhat shorter. She possesses a pointed tube at the end of the abdomen, through which the eggs are passed from her body into the cracks and crevices of the bark. The tube can be contracted or extended at the will of the fair owner and to suit the emergency of the case.

The parent lays her eggs on the bark of the Maple in July or August. As soon as the grubs are hatched they burrow into the bark, and there find protection during the cold of winter. When the warm days again

return the larvæ begin again their labors, penetrating deeper and deeper into the heart of the tree, sometimes tunnelling as much as three inches into the solid wood ; they make long and winding galleries up and down the trunks. A carpenter is known by his chips, so their presence is readily detected by the little heaps of sawdust that they throw out of their work-shops. If in time a stiff wire is inserted into their holes they can be easily put an end to by impaling. They are long, whitish, fleshy, deeply marked by transverse cuts ; their legs, although sixteen in number, are merely rudimentary promises of legs, and for ornament, not use ; they are of no avail for the purpose of locomotion. Not by means of their eight pairs of legs, but by alternately contracting and extending the segments of their bodies, do these worm-like creatures force their way along, and in order to assist their progress each segment is furnished with fleshy tubercles capable of protrusion, and which being pressed against the sides of their retreats, enable them to thrust forward by degrees the other segments (Ent. Rep., 1872, p. 36).

The head is the box of tools with which they saw and cut their way through the wood ; their work "is done slowly but effectively, and their gnawing teeth, though slow in action, are as resistless as the mordant tooth of time."

About midsummer these busy little carpenters who have never seen the light of day, unless by accident, strike—not for higher wages—but for a higher stage of existence ; they labor no more, but in the innermost recesses of their living homes fold themselves up snugly for their pupa sleep. At first the nymph is soft and whitish, but gradually it hardens and darkens till at last it lies enwrapped in a filmy veil, beneath which all the external parts of the future beetle are visible. The wings and the legs are folded calmly on the breast, while the long antennæ are turned back against the sides of the body and then tucked up between the legs. When at length it has become matured, it breaks its slumbers, forces its way through the bark, and comes out of its dark and narrow retreat to see the world and enjoy for the first time the glorious light of day and the pleasures of legs and wings, and love and passion, and to propagate its race.

Clytus pictus Drury, or the Painted Clytus, is another of our common species. Its form is very similar to that of *C. speciosus*, and it varies from six-tenths to three-fourths of an inch in length. Harris thus describes it : It is velvet black, and ornamented with transverse yellow bands, of which

there are three on the head, four on the thorax, and six on the wing-covers, the tips of which are also edged with yellow. The first and second bands on each wing-cover are nearly straight; the third band forms a V, or united with the opposite one, a W, as in *speciosus;* the fourth is also angled, and runs upwards on the inner margin of the wing-cover towards the scutel; the fifth is broken or interrupted by a longitudinal elevated line, and the sixth is arched and consists of three little spots. The antennæ are dark brown, and the legs are rust-red.

Clytus Robiniæ Forster.—According to Walsh the male of this species differs from *C. pictus* in having much longer and stouter antennæ, and in having its body tapered behind to a blunt point, while the female is not distinguishable at all. This insect does great injury to the Locust and Acacia trees, and appears in the perfect state in September. Harris confounds this with *Clytus pictus;* in fact, it was long considered by Entomologists to be identical with it. It has sometimes been known as *Clytus flexuous* Fab.

During comparatively late years *Robiniæ* has been extending its sphere of operations. For a long time it was known only in New York. Some thirty years ago it appeared in Chicago, and in 1863 it was seen two hundred miles further west. In 1855 it was first observed in Montreal; in 1862 it was very destructive to the Locust trees around Toronto; in 1873 Mr. E. B. Reed saw it in enormous numbers in London, Ont. Now it seems to be quite at home in all parts of Ontario. Harris, speaking evidently of this, though under the name of *C. pictus*, says: "In the month of September these beetles gather on the Locust trees, where they may be seen glittering in the sunbeams with their gorgeous livery of black velvet and gold, coursing up and down the trunks in pursuit of their mates, or to drive away their rivals, and stopping every now and then to salute those they meet with a rapid bowing of the shoulders, accompanied by a creaking sound, indicative of recognition or defiance. Having paired, the female, attended by her partner, creeps over the bark, searching the crevices with her antennæ, and dropping therein her snow-white eggs, in clusters of seven or eight together, till her whole stock is safely stored. The eggs are soon hatched, and the grubs immediately burrow into the bark, devouring the soft inner substance that suffices for their nourishment until the approach of winter, during which they remain at rest in a torpid state. In the spring they bore through the soft wood, more or less deeply into the trunk, the general course of their winding and irregular passages

being in an upward direction from their place of entrance. For a time they cast their chips out of their holes as fast as they are made, but after a while the passage becomes clogged and the burrow more or less filled with the coarse and fibrous fragments or wood, to get rid of which the grubs are often obliged to open new holes through the bark. The seat of their operations is known by the oozing of the sap and the dropping of the saw dust from the holes. The bark around the part attacked begins to swell, and in a few years the trunks and limbs will become disfigured and weakened by large porous tumors, caused by the efforts of the trees to repair the injuries they have suffered. . . . The grubs attain their full size by the 20th of July, soon become pupæ, and are changed into beetles and leave the trees early in September. Thus the existence of the species is limited to one year."

Space will not permit me to speak of the other members of this interesting and beautiful family—*nobilis*, *luscus*, *campestris*, *undulatus*, *longipes*, &c., each one of which is well worthy of a full description and biography.

DESCRIPTIONS OF NOCTUIDÆ.

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Before describing Noctuidæ the structure of the front or clypeus, between the compound eyes, must be examined. In a few genera it has a projection, or again a cup-like depression. The presence of ocelli, behind the antennæ, must be ascertained, and the compound eyes must be viewed under the microscope to see if the surface is naked or hairy. The tibiæ must be examined to see if they are spinose or unarmed, and the armature of the front pair, which is subject to considerable variation, must be studied carefully. After that the shape of the collar, the tuftings of the body, the neuration of the wings, the peculiarities of the antennæ and palpi, and the form of the genitalia should pass under inspection. Structural points given in descriptions will make it easier to place the species, and since our American genera are not yet in many cases fully understood, such additions to a description of the ornamentation are quite necessary.